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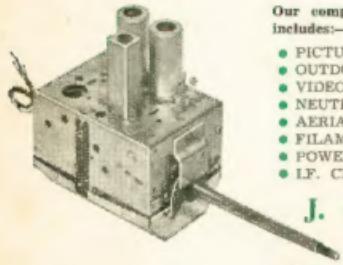
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4283 Kc.	6050 Kc.	6600 Kc.	7050 Kc.	7625 Kc.
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VK5WI: Sundays, 1130 hours EST, simultaneously on 7144 and 1434½ Kc. 3560 Mc. channel is used from 0915 hours to 1015 hours each Sunday for the W.I.A. Country hook-up. No frequency checks available.

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EDITORIAL



50 Mc. BAND AND THE I.G.Y.

The world wide study during the I.G.Y. has intensified interest in the 50-60 Mc. region.

Throughout South America are scattered a number of high power transmitting and receiving stations dedicated to the task of studying forward scatter and other propagation phenomena at these frequencies.

Australian Amateurs will be particularly interested to learn that facts and figures so far disclosed support the evidence collected by members of the W.I.A. and submitted by your Executive to the A.B.C.B. and Amateur Administration during discussions relative to transfer of Amateurs to make room for TV Channels. The problem of long distance interference at these frequencies was particularly stressed.

It is fitting now that an opportunity has come for Amateurs to take

part in this aspect of I.G.Y. study on at least portion of the old 50-54 Mc. band where international activity is greatest.

The continuation of the studies in conjunction with special facilities available during I.G.Y. could lead to great advancement in our knowledge of propagation at v.h.f.

Another event in which Australian Amateurs have cause to be jubilant at this moment is the success of our approach to the Philippines Government, through the Australian Minister of External Affairs, to permit communication between the Amateurs of our two countries.

It is this freedom of exchange which has always characterised the spirit of Amateur Radio and overcome all obstacles with one object in mind. International Good, Year in and year out.

FEDERAL EXECUTIVE.

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90° R.F. Phase Shift Networks

PART THREE

NETWORK IMPEDANCE

Let us look at the subject of network impedance. We wish to obtain as much voltage output from the network as possible, for a given power input.

The higher the network impedance the more output volts we obtain for any given input level, but we must compromise between output voltage and network impedance. Admittedly the operating power level of the network directly affects the output voltage obtainable, but the aspect of power level was dealt with earlier in detail.

Study the chart of component values with Fig. 1. Note how, as the frequency of operation is raised and the network impedance is kept constant, the values of the capacitances required in the network drop. A 300 ohm network at 3.5 Mc. requires condensers of 147 pF, at 14.2 Mc. this has been reduced to 35 pF, and at 28.4 Mc. would be halved to 17.5 pF.

The inductance required also has decreased from 13.83 μ H. at 3.8 Mc. to 3.37 μ H. at 14.2 Mc., and would be 1.68 μ H. at 28.4 Mc.

The stray capacity of circuit wiring plus the input capacity of balanced modulators, especially multi-element tube types, associated with the r.f. p.s.n. could easily equal, and in some cases exceed, the figure of 17.5 pF quoted above.

In regard to two branch networks of Fig. 1 such a stray capacity would fall across the inductive element of one branch and add to the capacitive element of the other branch, hopelessly throwing the phase shift well away from 90°. In an extreme case the inductance could even be resonated by the stray capacity, with likewise disastrous results to the phase shift.

So we must limit the network impedance to some value where the effect of stray circuit reactances cause no trouble at the operating frequency, or frequencies.

The pi network of Fig. 5 avoids the stray capacity trouble to a large degree, as this capacity, as previously explained, falls across the input and output capacitives of the network and can be then counted as part of them. Consequently for any given value of network impedance, a pi network can be operated satisfactorily at a higher frequency than a two branch type of network.

An attempt should be made to estimate the stray circuit inductance and capacity, especially the latter, when one is deciding what r.f. p.s.n. to use in any particular piece of equipment. The effect of such strays upon the operation of any contemplated network, should then be considered at the highest operating frequency at which a.s.b. energy is to be generated. If the network will perform well at that frequency, the effect of the circuit strays at lower frequencies can be ignored.

It is possible in some cases to balance out an unwanted capacitive reactance by inserting an inductive re-

actance of the same magnitude into the circuit at a suitable point, and vice versa in respect of undesired inductive reactance.

However, this method of approach to the stray reactance problem is not to be recommended, as the resulting circuit can quite easily assume the proportions of a monster that no one can tame, due to so many introduced variables. Also, balancing out reactance as described is only good for one frequency, further complicating matters.

Whilst on the subject of stray reactances, keep the two network output leads well separated.

Stray capacity will be the main problem as circuit inductance can be kept to a minimum by the use of heavy gauge wire and short leads. This should be done in any case, as floppy loose wiring may cause the phase shift to be unstable.

The circuits shown in Figs. 1, 3, 5, 7 and 8 should always be wired into the circuit so that no d.c. from the balanced modulators flows through them. If this condition is not observed the operating conditions of the balanced modulators will not be similar, also they will be coupled together by a d.c. circuit through the network, which produces undesirable results.

BY N. L. SOUTHWELL,* VK2ZF

impedance source if inefficient operation can be tolerated in the driver stage.

It is appreciated that when dealing with components operating at the Amateur band frequencies the average Amateur will not know the exact value of his components. Should resistors used be plus or minus some percentage of the rated value, it will not matter greatly in the case of the two branch networks as the adjustment procedure provides for adjusting the associated series reactances to a value equal to that of the resistor wired with them. With all the types of networks, values of components specified are "centre design values" as calculated, and if the actual components used (with the exception of terminating resistors, which are critical) are within a reasonable percentage of this figure, the networks will be found to "phase up" without trouble.

USING THE REACTANCE CHART

The chart in Fig. 9 will enable the derivation of the approximate value of components for networks at various frequencies having impedances other than those given in the chart in Fig. 1.

The chart plots the inductive and capacitive reactance for components

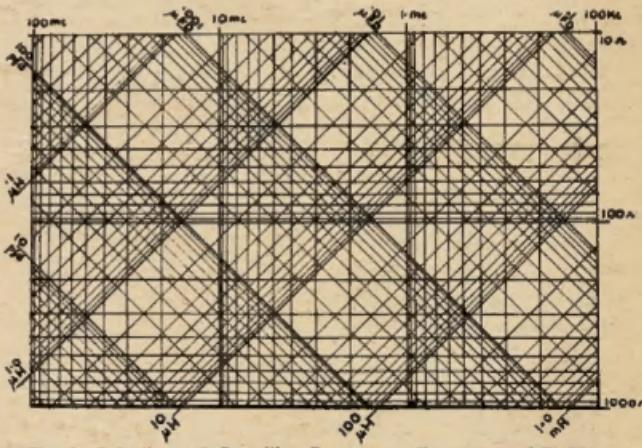


Fig. 9.—Inductive and Capacitive Reactance v. Frequency and Resistance.

The circuits shown in Figs. 2, 4, and 6 can be operated directly in the d.c. return path for the balanced modulators as in these networks the d.c. return paths for each output is completely separate, and of equal r.f. impedance and d.c. resistance.

Circuits of networks in Figs. 1, 2, 3, 5, 6, 7, and 8 should, as a general rule, be fed from a source having a low r.f. impedance and preferably low d.c. resistance, although it is possible to feed the above circuits from a high

between the frequency limits of 100 Mc. and 100 Mc., and resistance limits of 10 ohms and 1,000 ohms.

To use the chart enter it along the vertical line for the frequency of network operation, proceed down until it intersects the horizontal line which gives the value of network impedance required. From the junction of these two lines the values of the required inductance and capacity can be read off, by inspection and interpolation, on the inductance value lines which slope

upward from left to right and the capacity value lines which slope upward from right to left.

ADJUSTMENT

The adjustment of r.f. phase shift networks involves dealing with the line up procedure of the equipment in which they are used, and will be covered here in a general form.

In dealing with a.s.b. transmitter exciters, it will be assumed that the audio p.s.n. has been previously adjusted to approximately the correct conditions and that the carrier balance controls have been set for minimum carrier leakage.

An audio frequency oscillator having a good waveform output is required. This oscillator should be set to approximately 1250 cycles per second and the output waveform inspected on a c.r.o. If the result is not a good sinewave, the oscillator should be overhauled until it is, as it will be useless to proceed otherwise.

The output of the exciter should be suitably loaded and the c.r.o. also coupled to the output so that the r.f. appears on the vertical plates. The oscilloscope sweep circuit is set to about 250 cycles per second and is applied to the horizontal plates.

With all equipment operating and lined up to resonance, the audio oscillator is connected to the exciter audio input and the gain control on the exciter advanced; care should be taken not to overload any circuit by either injecting too much signal from the oscillator or by turning the exciter gain up too high.

Viewing the c.r.o. pattern you will probably observe something like Fig. 10. The job in hand is to minimise the ragged nipples on the edge of the pattern until it looks like Fig. 12.



Fig. 10.—Carrier not fully suppressed, also some unwanted sideband present.

A number of things can cause roughening of the edge of the pattern. They are:

- (1) Audio phase shift not perfect,
- (2) R.F. phase shift not perfect,
- (3) Carrier leakage through the exciter to its output,
- (4) Distortion in the output of the audio oscillator,
- (5) Distortion in the audio sections of the exciter,
- (6) Distortion in the r.f. section of the exciter after the balanced modulators.

We will assume we have a minimum of trouble from (1) and (6) above. In regard to (3), a small amount of carrier usually gets through; this has to be borne in mind, and when you are endeavouring to obtain the best performance possible from the equipment, the presence of traces of residual carrier must be remembered. The presence of residual carrier is easy to pick as it produces ripples on the pattern at half the frequency as those produced by the sideband energy.

Adjustment of the carrier balance controls, extra shielding of the various

stages, or an altered layout are the ways in which this carrier can be minimised.

To minimise the unwanted sideband the r.f. p.s.n. controls and the audio amplitude balance controls are the ones to be adjusted.

In respect of distortion in the audio oscillator's output listed as (4) above, causing a roughening of the edges of the c.r.o. pattern, a very "sticky" situation arises, should the oscillator have much third harmonic distortion in its output.

This third harmonic distortion energy falls at a frequency which is twice the audio oscillator output frequency away from the unwanted sideband. Unfortunately the undesired sideband is separated from the wanted sideband by the same amount but in the opposite direction—frequency wise.



Fig. 11.—Carrier suppressed, still some unwanted sideband.

The c.r.o. will show both unwanted sideband and third harmonic of the audio oscillator up as identical signals, and it will be impossible to tell them apart as they will appear as one signal.

Under the above conditions it is more than likely that you will try and introduce, quite unwittingly, a sufficient amount of undesired sideband energy to cancel out the third harmonic of the audio oscillator. The remedy is to make sure the audio oscillator has a good sine wave output.

The reason for keeping the level of the tone fed into the exciter at a level where no overloading of any stage in the circuit can take place will also be appreciated.

Figures 10, 11 and 12 show representative c.r.o. patterns of different conditions you will encounter when lining up an exciter.



Fig. 12.—Both carrier and unwanted sideband suppressed.

Fig. 13. gives a table of the suppression values for various amounts of ripple in the c.r.o. pattern due solely to unwanted sideband.

The line-up method just described using a c.r.o. has its limitations, as can be seen by inspection of the table in Fig. 13. The best suppression that can be measured on a c.r.o. is between 30 and 40 db.

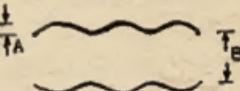
Another way of checking the output is by means of a receiver that has a single sideband adaptor connected to it. Both methods can be used together, or either alone. For routine line-ups after the initial adjustments have been ascertained, the writer prefers to use the receiver, as with practice it is quicker, more convenient, and accurate. In fact if you transmit much residual carrier the use of a receiver may be the most accurate means for you to use.

The receiver is set up with its input shorted and r.f. gain turned well

back, so that with no modulation you can tune in the signal radiated as residual carrier around S4 or 5, zero beat this signal exactly. Switch the adaptor to receive the unwanted sideband, apply tone input to the exciter as described previously and adjust the exciter controls until a minimum signal emanates from the speaker. Do the adjustments at a fairly low room volume, generally the lower the better, as the ear is more sensitive to changes in level at low volume. When you are satisfied throw the adaptor sideband selector switch to the opposite sideband and observe the difference in strength.

Now throw the sideband selector switch on the exciter so that the opposite sideband is radiated. Check the relative strengths of the two sidebands on the receiver. The ratio of suppression should be about the same as before.

It is quite possible when you throw the exciter s.b. selector switch that you may find the suppression not as good as that for the sideband you have lined it up on. In this case a small adjustment of the exciter r.f. p.s.n. controls and the audio balance controls are called for, possibly you will only need to adjust the r.f. p.s.n. to regain your original sideband suppression.



Ratio	Sideband Suppression
1:5	14 db.
1:10	20 db.
1:15	24 db.
1:20	26 db.
1:30	30 db.
1:40	32 db.
1:50	34 db.
1:70	37 db.
1:100	40 db.

Fig. 13.—Deriving sideband suppression from c.r.o. patterns.

Inspect the controls to see how much you have had to move them and set them half way between the two settings required for the different sidebands.

The checking of both sidebands radiated by the exciter is a necessity as under some conditions it is possible on one sideband to obtain good suppression from a single tone when the r.f. and a.f. phase shifts are not 90°. Switching sidebands proves whether your adjustments are satisfactory or not.

Under conditions of good adjustment it should be possible to barely hear the unwanted sideband on the speaker when the signal from the wanted sideband is set to give fair room level.

ADJUSTMENT OF RECEIVING TYPE S.S.B. ADAPTOPTS

The adjustment of r.f. p.s.n.'s in receiving type s.s.b. adaptors will also be given in brief outline as details will vary a little with individual equipment.

(Continued on Page 4)

ZEPHYR MICROPHONES



"THE MICROPHONE THAT SPEAKS FOR ITSELF"

TYPE "80"

A high quality Moving Coil Microphone of striking appearance and fidelity.

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- Solid cast case, finished in stoved black enamel, full tilting head.



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A quality Crystal Insert with "Zephyrfil" filter.

- Durable chrome steel cage.
- Hand or stand pattern.
- Good high frequency response.
- Full tilting head.



TYPE "40"

A high grade Studio Microphone, reasonably priced, for those requiring high fidelity.

- Imported magnets, highly efficient generator.
- Fully protected against dust and filings.
- Rotatable cage—360°.
- Chrome copper cage, black bakelite base, and steel ginbles.

TYPE "90"

Precision built Moving Coil Generator provides good quality reproduction.

- Light weight, durable chrome and baked enamel metal case.
- Full tilting head.
- Excellent sensitivity.
- Robust construction.

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E.H.T. Without Tears

BY M. RILEY,* A.S.T.C., VK2ARZ

In spite of the fact that small modulation monitors have been described in "A.R." and other magazines with some regularity over a period of nearly thirty years, a few hours listening on our phone bands will reveal that the simple c.r.o. is still not being used to the extent it should.

The cold hard facts are that although plate meters seem to be used extensively to monitor, in a rough fashion, the degree of modulation applied to the majority of transmitters, this indication of average modulation does not tell us very much about what is happening to the carrier under peak modulation conditions.

Failure to recognise this fact leads to reports of overmodulation and splatter. The only satisfactory way to overcome these difficulties lies in the construction and use of a simple c.r.o. One Sydney operator will not consider phone operation without his c.r.o. even when the rig involved is only a mod. osc. (fortunately now relegated to its correct place). He claims that he felt "completely lost" when the c.r.o. was out of action for a short time.

The writer has attempted to analyse the reasons which have prevented the simple c.r.o. from assuming a place in the Ham shack similar to that occupied by the multimeter and g.d.o. In previous years c.r.o.'s were expensive items. Recently, however, numerous types have appeared at prices ranging from 10 to 40 shillings. If the life of one of these is considered in terms of your operating time, it can be seen that two c.r.o.'s at the most will outlast the average Ham and that the price of two tubes spread over 30 years removes the consideration of c.r.o. cost.

The average Ham should experience little difficulty in wiring up the four potentiometers and half dozen resistors necessary to build a small c.r.o.

Assuming the use of a "negative e.h.t." supply all the voltages required for the operation of such a unit, with the exception of the e.h.t. supply, may be obtained from the transmitter itself.

It appears likely that what we really need is some form of "black box" which we can install in our equipment. This "black box" must place very little load on the power supply operating it and must produce sufficient e.h.t. to operate any c.r.t. likely to be found in the average junk box.

If you have been waiting for such a "black box" read on.

If you are still trying to find an excuse for the lack of a simple c.r.o. type modulation monitor in your shack, stop here and turn to the YL corner.

The unit to be described places a very small load on any one of the transformers used to power your rig.

If you wish to build the c.r.o. into the modulator (its logical position) then use the speech amp. supply for a small c.r.o. or the modulator supply for a large tube.

The output voltage (V_o) developed by the "black box" is a function of the transformer voltage. Typical figures are as follows:

Transformer Voltage	Loaded E.H.T. Voltage
220v. r.m.s. a side	-ve 900 v.d.c.
350v. r.m.s. a side	-ve 1500 v.d.c.

No special filament windings are needed to operate the "black box" supply.

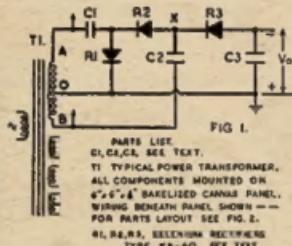
The "magic" is supplied by the use of special selenium rectifiers.

At this stage you may be prepared to throw up your hands in desperation! If so, turn to the DX pages.

USE OF SELENIUM RECTIFIERS

Perhaps you have had some unfortunate experience with selenium rectifiers. Most failures of that nature are caused through ignorance of the factors involved in the operation of these rectifiers so that the manufacturers' ratings have been exceeded.

Once a few simple principles have been established in your thoughts, you will find yourself in a position to judge the suitability of any type you may have on hand for a particular



PARTS LIST.
D1, D2, C1, C2, SEE TEXT.
T1 TYPICAL POWER TRANSFORMER.
ALL COMPONENTS MOUNTED ON
4" x 6" x 8" BAKELIZED CANVAS PANEL.
WIRING BEHIND PANEL SHOWN —
FOR PARTS LAYOUT SEE FIG. 2.
S1, R1, R2, R3, SELENIUM RECTIFIERS
TYPE KB-40. SEE TEXT.

job. Before describing the "black box" a few words on selenium rectifiers in general will not be out of place.

Basically, they have two important ratings; maximum rated forward current and maximum inverse voltage.

The first rating determines the load current which the rectifier will deliver and is determined by the area of active conducting material on each plate and the spacing between plates in a rectifier stack. A typical rating is 50 to 60 Ma./sq. cm. of active material. To determine the rating of a metal rectifier plate, measure the outside and inside diameter of the conducting material on the plate (assuming circular plates with "centre contact" mounting), calculate the area in sq. cm. and multiply by 50 to obtain the current rating in millamps.

If the stack is used in "push-pull" or bridge connections, the rating calculated will be correct. If half-wave rectification is used, this figure must be halved to give the correct rating.

The rating of maximum inverse voltage is the maximum voltage which

should appear across each plate in the non-conducting or "reverse" direction. This rating determines the voltage which may be applied to the stack. A value of 14 to 18 volts r.m.s. is normal for rectifier plates manufactured in Australia. In the U.S.A. a figure of 65v. maximum peak inverse voltage is quoted for some domestic receiver applications. This explains those miniature rectifiers so often seen in "QST" performing an apparently impossible task.

If a rectifier is feeding into a capacitive filter a maximum input voltage of 9v. r.m.s. per plate may be used in a half-wave circuit, 9v. r.m.s. per plate a side in "push-pull", or 18v. r.m.s. per plate in "bridge" rectification.

A selenium rectifier is also very sensitive to breakdown induced by excessive temperature rise. The best we can do here is to see that the other ratings are not exceeded and that the rectifier is well ventilated.

The manufacturers recommend that the normal maximum working temperature should not exceed 65°C. (149°F.) although a value of 85°C. (185°F.) can be withstood with safety for some hours⁽¹⁾.

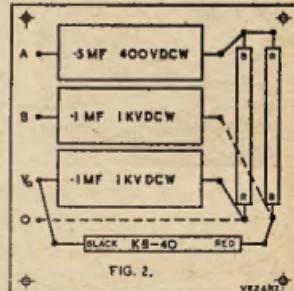
CONSTRUCTION OF E.H.T. SUPPLY

To proceed with the construction of the "black box" e.h.t. supply you will need:

- Three selenium rectifiers type KB-40. These are rated at 96v. r.m.s. inverse and 5 Ma. maximum forward current. They are obtainable ex stock from the Sydney manufacturers (S.T.C., Botany Road, Alexandria, Sydney, price 10/8 plus tax).
- One paper capacitor 0.5 μ F. or greater, 400v. or more d.c.v.w. (C1).
- Two high voltage capacitors 0.1 μ F. or greater, voltage rating 1kv. or greater (C2 and C3).

All components are mounted on a piece of bakelized canvas in the unit constructed by the writer. The actual

(Continued on Page 6)



(1) "The Manufacture, Construction and Application of S.T.C. Selenium Rectifiers" by R. F. Haren, A.S.T.C.

RADIO—31 YEARS AGO

BY ERIC TREBILCOCK, BERS195

[31 years ago Eric Trebilcock, BERS195, first made his entry into the field of Amateur Radio interest. He recently re-read some radio magazines which were in existence at that time and from same extracted some information which will be of interest to present-day Hams and S.W.L.'s—31 years is a long time ago, probably before half of our VK Hams were born!!—Ed.]

This information refers to the 1926-1927 era. In those years—

There were approx. 400 licensed Amateur Stations in VK, and 100 in ZL.

Of those licensed in 1926, 96 still hold the same call sign in VK.

Only two call signs were listed under Papua-New Guinea (VK4CP and VK-4CR).

There were 21 broadcast stations—eight "A" class and 13 "B" class.

A 200-page radio magazine cost 1/- in those days!

There were 180,000 broadcast listeners' licences in existence in VK—of which total 90,000 were in VK3 and 50,000 in VK2.

A broadcast listeners' licence cost varied between 17/6 and 27/6. A dealers' licence cost £2 to £5, and a licence for a receiver in a hotel cost £7/10/0 to £10.

A crystal set was retailed at £4.

A 2-tube b.c. receiver cost £15, 4-tube £28, 6 tubes £45 to £120; and

* 340 Gillies St., Thornbury, N.17, Vic.

a portable job cost £75 believe it or not!

In those days 500 watts was referred to as low power!

A train toured N.S.W. carrying a fully equipped b.c. station, the aerial for which was 60 ft. long and mounted on two masts 40 ft. high above the carriage roofs!

There were 23 Australian based warships, all of which had call signs commencing with G.

The main DX band for Amateurs was 32 metres, and the prefix was A (later OA—then VK still later).

S.W.L.'s and b.c. listeners alike used to derive great pleasure from week-end music and speech transmissions by Amateur Stations around 200 metres.

At night time it was common place for Interstate reception to take place regularly—on this "Amateur" band.

Several of the big DX men 30 years ago are still to be heard chasing DX—on the other hand, some of our present-day chief experiments were in the front ranks of experimenters 30 years ago.

QSL cards were no less popular then than they are now. (Most b.c. stations used to seek DX reports too, for which QSL cards were offered.)

"Cage" type aerials were all the rage with Amateurs and b.c. stations—beams were virtually unknown.

In the intervening 31 years, BERS195 has made 182,000 log entries, mailed 15,000 reports, and received 8,000 QSL cards.

E.H.T. WITHOUT TEARS

(Continued from Page 8)

physical construction does not matter, but the method suggested has proven simple, rugged and reliable. Pigtailed on each component are soldered to lugs held on the insulating material by tubular rivets (see Fig. 2).

THEORY OF OPERATION

To understand the operation of the circuit (Fig. 1) assume that point A becomes positive with respect to points O and B.

Rectifier R1 will conduct and C1 will charge to the peak value of the voltage AO. (C1 must be rated to withstand this voltage of $1.4 \times AO$ r.m.s. voltage. For a 220 volt a.c. side transformer, C1 should be rated to $220 \times 1.4 = 310$ d.c.w.)

On the next half-cycle R2 will conduct and due to the charge on C1, C2 will be charged to a potential of $3 \times 1.4 \times AO$ volts peak.

The potential of point B will vary from $1.4 \times AO$ positive to $1.4 \times AO$ negative with respect to the point O. The polarity of R3 is such that although point X will tend to vary from $4 \times 1.4 \times AO$ to $2 \times 1.4 \times AO$ volts, C3 will be maintained at $4 \times 1.4 \times AO$ volts.

In the case of a 220 volt a.c. side transformer this means that C3 will be charged to nearly 1,100 volts unloaded. When the e.h.t. bleed is added, together with the c.r.t. load, this potential will drop to about 900v.

The theory of operation is included so that intending constructors can check the rating of any components which may be pressed into service. Before you attempt to use any capacitor in the "black box" see that its rating will cover the voltages likely to be experienced. If possible give them a "leakage" test on a neon-type indicator or check them with a megger.

Having provided yourself with a compact, simple and reliable source of e.h.t. for your modulation monitor, any standard Amateur manual will provide you with the circuitry of a simple c.r.o. The one described in "The Radio Handbook", eleventh edition, is the one used by the Sydney Amateur mentioned. The c.r.t. will require a filament winding isolated from all other tubes in the equipment. One of the normal windings on the power transformer can be used and although the insulation is probably not designed to withstand several hundred volts to frame, equipment constructed this way is known to be operating satisfactorily. If you have any strong feelings on the subject it is not difficult to wind up a one-to-one transformer (having adequate insulation to withstand the voltage used), energised from a filament winding on T1.

If the c.r.t. has a four volt or two point five volt filament this procedure is recommended.

And now that is the story of the "black box". The writer wishes good reports and more effective modulation to anyone prepared to try this not well known approach to e.h.t. generation.

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THE 1957 EDITION CONTAINS—

- An up-to-the-minute listing of Station Call Signs and Addresses of Licensees of Transmitting Stations located in the Commonwealth of Australia and Territories including VK1 Australian Capital Territory, Z Call Signs, and W.I.A. Listener's Numbers.
- Over one thousand additions, alterations and deletions since the last edition, making more than three thousand amendments since the 1954 edition.
- DX Countries, Prefixes and their Zones.

Antenna Couplers for 50 and 144 Mc.

SHIELDED COUPLERS FOR THE V.H.F. STATION

THOUGH antenna couplers are quite general on lower frequencies, they are still something of a rarity in v.h.f. stations. Why bother with a combination of coils and capacitors, when a simple balun of co-axial line will serve the same purpose?

There's nothing wrong with the balun approach, provided we recognize its limitations. The balun will convert from co-ax to balanced lines, and step up the impedance from 50 to 200, or 75 to 300 ohms, in the process, but it will do no more. Transmission line of 200 ohms impedance is little used, and the common polyethylene-insulated 300 ohm lines leave quite a bit to be desired, particularly in wet weather. Probably the best transmission line for most v.h.f. installations is the open-wire variety, with impedance ranging from 400 to 600 ohms. A balun will not do the job properly with this sort of line.

In addition, few v.h.f. antenna systems actually present a purely-resistive load of 300 ohms at the transmitter end. Measurement of impedance, at the end of the line or at the antenna, may show values well away from those that can be matched with simple co-axial baluns. A moderate mismatch between the antenna and the transmission line

• Unless only a short transmission line is needed for the run from transmitter to array, losses may run rather high if co-ax is used on v.h.f. antenna systems. Yet modern transmitter design and the need for t.v.l. protection demand the use of co-axial output coupling. The best combination for most v.h.f. installations is some form of balanced transmission line for the main run, and an antenna coupler to handle the conversion from the balanced line to the co-axial transmitter connection. Here are shielded couplers to do the job on 50 and 144 Mc. (Slight modifications will be necessary for 56 Mc. band operation in Australia.—Ed.)

something less than a red-hot v.h.f. antenna, but the couplers made it possible to load properly, and the antenna didn't do too badly. With another coupler of similar circuitry,¹ the same doublet also served well enough for our occasional excursions on all the "d.c. bands" from 30 to 3.5 Mc.

CONSTRUCTION

Antenna couplers for lower bands are usually constructed with their tuned circuits out in the open. Shielding is desirable, but the large coils needed for those frequencies would require quite large enclosures. Metal in the field of a coil reduces its "Q" so we should allow for free space all around the coil for at least half the diameter. On 50 or 144 Mc. we can satisfy this requirement and still build the antenna coupler in a compact package.

Our couplers are housed in aluminium utility boxes 3 x 4 x 6 inches in size. These are the two-piece variety, and all the components are mounted on one of the pieces. With only slight modification a standard chassis could be used, the shielding being completed by adding a bottom cover.

The two units are identical in external appearance, and similar components are used. The main tuning capacitor, C2, is fastened to the front wall $\frac{1}{4}$ inches from the left side. The series capacitor, C1, and the co-axial fitting, J1, are $\frac{1}{2}$ inches up from the bottom of the rear wall, $\frac{1}{2}$ and 23 inches, respectively, from the left edge, as viewed from the back. A standard crystal socket, J2, is the terminal for the balanced line. It is mounted on the top, one inch from the edge.

Details of the interior arrangement should be obvious from the photographs. The 50 Mc. coils are cut from commercially available stock inductors, though they can, of course, be made by

hand. The coupling winding, L1, is inserted inside the tuned circuit. The polyethylene strips on which the coils are wound keep the two coils from shorting to each other, so no mechanical support other than that provided by the leads is needed. The leads to L1 are brought out between the turns of L2, and are insulated from them by two sleeves of spaghetti, one inside the other. Do not use the soft vinyl type of sleeving, as it will melt too readily if, through an accident to the antenna system, either coil should run warm.

In the 144 Mc. unit the positions of the coils are reversed, with the tuned circuit, L2, at the centre, and the coupling coil on the outside.

The components are designed to stand up under fairly high power. Smaller parts could be used if operation is to be at the 100 watt level or lower, but there would be no great saving in cost. Similar tuning capacitors are used in both couplers, but some of the plates are removed from the one in the 144 Mc. unit. This provides easier tuning, though it has no great effect on the minimum capacitance, and is therefore merely a matter of convenience. The capacitor may be left in its original condition, if you want to save it that way for some other eventual use.

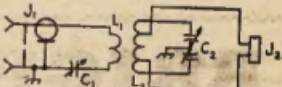


Fig. 1—Circuit and parts information for the v.h.f. antenna coupler.

C1—100 pF. variable for 50 Mc., 50 pF. for 144 Mc.

C2—31 pF. per section split-stator variable, 0.07 inch spacing. Reduce to 4 stator and 4 rotor plates in each section in 144 Mc. coupler for easier tuning; see text.

J1—Co-axial fitting, female.

J2—Crystal socket, female.

L1—50 Mc. 4 turns No. 18 tinned, 1 inch diam.

$\frac{1}{4}$ inch spacing.

144 Mc.: 2 turns No. 14 enamel, 1 inch diam., $\frac{1}{4}$ inch spacing. Slip over L2 before mounting.

L2—50 Mc. 4 turns No. 14 tinned, $\frac{1}{4}$ inch diam., $\frac{1}{4}$ inch spacing. Tap $\frac{1}{4}$ turns from each end.

144 Mc.: 5 turns No. 12 tinned, $\frac{1}{4}$ inch diam., 1 inch long. Tap $\frac{1}{4}$ turns from each end.

ADJUSTMENT

There is only one way to adjust an antenna coupler properly. That is by means of some form of standing-wave bridge. Anything else is guess-work. You can come up with an adjustment that will work, but you will never know if it is the optimum, except by checking the standing-wave ratio on the co-axial line from the transmitter to the coupler.

If you have a power-indicating bridge it will be necessary to drop the power level to that recommended for the bridge in question. Adjustment of the coupler is the same for either, however, and once it is set correctly it may then be used for that antenna sys-

will do very little harm, provided that some provision is made for tuning the line, and for coupling to it properly. That's where our antenna couplers come in. With them you can make almost any antenna system that is fed with a balanced line take power on 50 and 144 Mc.—and that can be highly useful in an emergency.

The writer recently made use of the two antenna couplers described below in this way. Some changes in our arrays for 50 and 144 Mc. had been started, and then were held up by a stretch of the nasty weather that New England can serve up in March. For a week or so we got in some tolerable operating on 6 and 2 metres by using a 68-foot doublet that is fed with about 100 feet of open-wire line. It was

¹ Reprinted from "QST," July, 1956.

² See the Transmission Lines chapter of any recent edition of the "Handbook" for details.

tem at any power level, and with any length of co-ax, and any transmitter.

Set the bridge to read forward power, and with the antenna connected to J2 adjust the antenna coupler capacitors and the transmitter tuning roughly for maximum reading. Now set the bridge to read reflected power, and adjust the antenna coupler capacitors, first one and then the other, until minimum reflected power is achieved. Unless the line input impedance is very highly reactive it should be possible to get the reflected power reading down to zero, or very close to it. As far as the antenna coupler is concerned, the job is now complete, for the antenna presently in use. Adjustment from here on, for maximum transfer of power from the transmitter, is done entirely at the transmitter. If you can't get the transmitter to load properly now, you need some modification of its coupling system. If the bridge shows zero reflected power, the co-ax link now represents a purely resistive load for the transmitter. Leave it that way, and go to work on the rig!

The couplers were checked in the lab, with resistive loads from 100 to 1600 ohms, over which range it was possible to show a 1:1 s.w.r. in the co-ax line and load the transmitters effectively. This simulates a mismatch of up to 5.3 to 1 for 300 ohm lines, or 4.5 to 1 for 450 ohm lines. It is unlikely that a v.h.f. array built to any standard design will have an s.w.r. of anything like this order. Antennae intended for use on the other bands may present higher or lower values, but a

slight juggling of the line length should make it possible to load them effectively with the couplers shown.

— E. P. T.

PHASE SHIFT NETWORKS

(Continued from Page 3)

With the main receiver set on manual volume control and with the r.f. gain turned well back, tune in an a.m. phone signal. Listening to the signal when tuned to zero beat it should be clear and undistorted at the output of the adaptor.

Detune the receiver to one side of the station until a heterodyne of 1,000-1,500 c.p.s. is obtained with the received carrier. Operate the adaptor's sideband selector switch and observe which position gives the weakest received signal and leave it in that position.

Adjust the r.f. p.s.n. and the audio balance control for that particular sideband until the received signal is at a minimum. The receiver should now be detuned to the opposite side of the a.m. carrier, to obtain approximately the

CHANGE OF ADDRESS

W.L.A. members are requested to promptly notify any change of address to their Divisional Secretary, not direct to "Amateur Radio."

same beat note, and the adaptor's sideband selector switch is thrown to the other sideband position.

The audio balance control for that sideband and the r.f. p.s.n. controls are adjusted until the received signal in the speaker is again at a minimum.

Switch alternately between the two sideband positions on the adaptor, tuning the receiver to the opposite side of the received signal each time. After two or three adjustments to each sideband position the job will be complete.

As in the case of the a.s.b. exciter, it may be necessary to strike a mean position for the final settings of the r.f. p.s.n. controls.

Now you will find as you tune across the band that the carriers of a.m. stations can only be heterodyned on one side of zero beat, likewise c.w. signals. Tune in two a.m. stations QRMing each other and observe how selecting the appropriate sideband either eliminates the QRM or renders it of no nuisance value. In the case where a station is hard to read on either sideband try reading it on a normal a.m. receiver and you will appreciate what a properly lined up adaptor is capable of doing.

This article has covered r.f. p.s.n.'s, from almost all angles, practical and theoretical, the types covered are thoroughly representative of those in use by the a.s.b. fraternity. Other phase shift networks may be encountered occasionally, as other circuits do exist, but this article should meet the requirements of almost all the readers interested in these circuits.

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THOSE EQUALISING PULSES

Maybe you have built your own t.v. receiver, or maybe you've only a theoretical and academic interest in its circuitry, but, whichever way your interest lies, no doubt you've wondered about those pulses! Let us lift you out of the confusion caused by other published explanations of this facet of t.v. by referring you to a series entitled "Television Made Easy," published in "Amateur Radio" under the names of Ken Wall and John Jarman, in particular Part VI., February, 1952, from which we quote:

"Now these equalising pulses; what are they for? Well, we've learnt that each picture is scanned in two 'fields', each of 31½ lines. The first field is terminated in the middle of a line, and the second at the end of a line.

"Now, supposing that normal horizontal sync. pulses were used right up to commencement of vertical sync. pulses. Consider the interval between the last horizontal and the first vertical pulses. At the end of the first field, it would be shorter than at the end of the second field. The small charge left on the integrator, by this last pulse, has therefore less time to escape so that at the end of the first field, charge on integrator reaches its peak faster.

"In every picture, therefore, the first field would be 'cut short', so that interlacing would not be correct. The lines of the second field would tend to 'overlap' those of the first, instead of falling between them.

"To prevent this, we substitute some of the horizontal sync. pulses, both before and after each set of vertical sync. pulses, with narrow pulses, at twice line frequency, to equalise conditions for each type of field."

Amazing, isn't it, that such a lucid explanation has lain dormant for five and a half years?

VALVE DATA

6SN7GTA

MEDIUM-MU TWIN TRIODE

Base: Octal.

Socket connections:

- Pin 1—Grid of Unit No. 2.
- Pin 2—Plate of Unit No. 2.
- Pin 3—Cathode of Unit No. 2.
- Pin 4—Grid of Unit No. 1.
- Pin 5—Plate of Unit No. 1.
- Pin 6—Cathode of Unit No. 1.
- Pin 7—Heater.
- Pin 8—Heater.

Electrical Data

Heater voltage 6.3 volts
Heater current 0.6 amp.

CLASS A1 AMPLIFIER

Values are for each unit.

Maximum Ratings:

Plate voltage 450 max. volts

Cathode current 20 max. ma.

Plate dissipation

For either plate 5 max. watts

For both plates with

both units operating 7.5 max. watts

Peak heater-cathode

voltage:

Heater negative with

respect to cathode 200 max. volts

Heater positive with

respect to cathode 200* max. volts

* The a.c. component must not exceed 100 volts.

Characteristics:

Plate voltage	250	volts
Grid voltage	-3	volts
Amplification factor	20	
Plate resistance	7700	ohms
Transconductance	2600	amhos
Plate current	9	ma.
Plate current for grid voltage of -12.5 volts	1.3	ma.
Grid bias voltage (approx.) for plate current of 10 mA	-18	volts

Maximum Circuit Value:

Grid-circuit resistance:

For fixed-bias operation 1.0 max. megohm

E.Y.M.A.—EIGHT-HUNDRED YEARS

MUNICH AWARD AND CONTEST

On the occasion of the Munich 800-Year Anniversary Festival, the Munich section of the D.A.R.C. arranges a contest from 1st October, 1957, to 31st December, 1957, to promote a closer contact with all Amateurs of the world.

BESTIARY RULES

As many contacts as possible should be established with Munich stations.

Mode of operation may be phone or c.w., or both. Minimum power for phone contacts must be Q1/S3, for c.w. contacts RST33A.

Each contact with a single Munich station is counted as one point per band. The sum of points thus gained is multiplied by the number of bands used during the contest. Leagues will be established in which Amateurs outside of Europe may count two points per contact established on the 3.3 Mc. band.

Munich stations may be recognised during the contest by means of the identifier "C 12", i.e. Internal German zone C 12—area of Munich; which will be added to the call sign. The letters "C 12" will be preceded by the prefix DL2. DL4, DL5 and DJ0 are not recognised as German stations for the purpose of this contest.

The Amateur with the highest score from each continent will be awarded expenses for a 3-day stay in Munich on the occasion of the Munich 800-Year Anniversary Festival in July, 1958. During the 3-day stay the winner will be awarded with his medal and his certificate. Second and third place winners from each continent and first place winners from each country, according to the official DX C. countries list, will also receive a certificate.

Immediately after the end of the contest each participant will receive a special QSL card. This QSL card will be a reproduction of the original certificate with an indication of officially checked scores. In addition, all Amateurs listed in the official DX C. countries list will also receive a certificate.

For establishing a certain number of contacts with Munich stations. For a certificate Amateurs in zones 22, 23, and Amateurs in zones 13 and

24, if located in the Antarctic, must contact 10 different Munich stations. Participants in the contest will automatically receive the certificate if they fulfil the rules.

QSL cards for Munich Amateurs must be addressed as follows: O.V. München, Post Office Box 4, Munich 40, Germany. Only QSL cards showing all necessary data will be accepted.

Contest contacts will be acknowledged only if the contestants submit their cards according to the rules given above. The deadline mailing date (official post mark date) for QSL cards for this contest and the certificate is 31st January, 1958, and cards arriving after 31st March, 1958, cannot be acknowledged.

D.X.C.C. LISTING

Listed below are the highest twelve members in each section. New members and those whose totals have been amended will also be shown.

PHONE

Call	Car. Cnt.	Car. Cnt.	Call	Car. Cnt.	Car. Cnt.
VK4PJ	29	118	VK4JD	1	1
VK5AT	31	120	VK4KS	9	122
VK4HR	13	102	VK5KW	4	150
VK5ER	2	188	VK4RW	8	147
VK5BZ	3	176	VK5LN	11	141
VK5EE	10	163	VK5JE	7	140
New Members					
VK5TE	27	118	VK5LZ	38	101
VK5MW	58	111	VK5ACN	39	101

C.W.

Call	Car. Cnt.	Car. Cnt.	Call	Car. Cnt.	Car. Cnt.
VK4PJ	29	324	VK5CX	25	210
VK5BZ	15	235	VK5BY	45	192
VK5KB	10	225	VK5BZ	3	183
VK5HR	8	215	VK5EL	30	186
VK5ER	8	215	VK4EL	9	175
VK5XU	45	215	VK5RU	14	172
Amendments					
VK5KK			VK5KK	41	160
New Members					
VK5RP	56	198	VK5CH	55	106
			VK5ZA	57	101

OPEN

Call	Car. Cnt.	Car. Cnt.	Call	Car. Cnt.	Car. Cnt.
VK5ACK	6	228	VK5JG	12	210
VK4PJ	29	328	VK5HG	18	186
VK4HR	7	233	VK5NS	18	186
VK5BZ	4	231	VK4EL	10	176
VK5XU	61	231	VK5KW	13	171
VK5ER	8	216	VK5OI	2	170
Amendments					
VK5CK	54	163	VK5LZ	23	141
			VK5YB	87	131
New Members					
VK5BG	56	112	VK5ZA	55	103
			VK5EG	57	101

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1957 "CQ" WORLD-WIDE DX CONTEST RULES

I.—CONTEST PERIOD:

Phone Section—0200 GMT October 26 to 0200 GMT, October 28.
CW Section—0200 GMT, November 30 to 0200 GMT, December 2.

II.—BANDS:

The Contest activity will be in the 18, 3.5, 7, 14, 21, 27 and 28 Mc. Amateur bands.

III.—TYPE OF COMPETITION:

1. Phone Section—(a) Single operator.
- (b) Multi-operator.
2. CW Section—(a) Single Operator.
- (b) Multi-operator, (c) Novice operator.
3. Inter-club.

IV.—EQUIPMENT:

There is no limit to the number of transmitters and receivers allowed, and competitors may use the maximum power permitted under the terms of their licenses.

V.—SERIAL NUMBERS:

Phone stations will exchange serial numbers consisting of four numerals, the first two being the readability and strength report, and the last two being their own ZONE number. Phone stations in Zone 1 through 9 will prefix their Zone number with zero (01, etc.). CW stations will exchange serial numbers consisting of five numbers, the first three being the RST report, and the last two being their own ZONE number. Stations in Zone 1 through 9 will prefix their Zone number with zero (01, etc.).

VI.—POINTS:

Contacts between stations on different continents will count three points.

Contacts between stations on the same continent, but not in the same country, will count one point.

Contacts between stations in the same country for the purpose of obtaining a Zone and/or country multiplier, will be permitted but no QSO points will be allowed.

More than one contact between stations on each band will not be permitted.

VII.—MULTIPLIERS:

Two types of multipliers will be used.

1. A multiplier of 1 for each Zone contacted on each band.
2. A multiplier of 1 for each Country worked on each band.

VIII.—AWARDS:

Certificates will be awarded in each section as follows.

1. To the highest scoring station on each single band in the following areas:
 - (a) Each call area of the U.S.A.
 - (b) Each call area of Australia and Canada
 - (c) All other countries.
2. To the stations having the highest combined total of all bands (or more than one band) in the following areas

- (a) Each call area of the U.S.A.
- (b) Each call area of Australia and Canada.
- (c) All other countries.

IX.—SPECIAL AWARDS:

1. A cup will be awarded to the highest scoring Single Operator, All Band, Phone Station in the world.
2. A cup will be awarded to the highest scoring Single Operator, All Band, CW Station in the world.
3. A plaque will be awarded to the affiliated DX Club submitting the highest aggregate score of the scores submitted by its members.

(a) For a Club to enter, an officer of the Club must submit a list of its members participating and their scores.

(b) This list may include scores of Single Opr. and Multi-Opr. Stations; both Phone and CW.

(c) Stations that are members of a competing Club must therefore indicate this fact on their report forms.

4. At the request of the donors, last year's winners are not eligible for the 1957 Phone and CW cup award. In other words the cups cannot be won more than once by the same station. This, however, does not hold true for the plaque award.

5. Also such special or additional awards as the DX Committee shall choose to make. In countries or sections where the returns justify second and even third place, certificates may be awarded.

X.—SCORING:

The score for each Single Band is the sum of the Zone and Country multipliers for that band, multiplied by the total contact points on that band.

2. The total All Band score is the sum of the Zone and Country multipliers of all bands, multiplied by the contact points on all bands.

3. Everyone who sends in a log for a single band is eligible for a Single Band award only. If more than one single band log is submitted, indicate which band is to be judged.

4. Those who submit logs for two or more bands will be judged for the All Band award.

5. No station is eligible for more than one award.

6. Contestants must show a minimum of eight hours of operating time to be eligible for an award. If a contestant operates All Band and wishes to be judged for a specific Single Band, he must show a minimum of eight hours on that band.

XI.—ZONES AND CONTINENTS:

To check your own Zone number and continent for scoring purposes, refer to the A.R.R.L. or "CQ" list as well as the W.A.Z. map. For continental boundaries the same as used for W.A.C. will be recognised. Should any question arise as to the positive location of any station, the official definition will be final.

XII.—OPERATING SUGGESTIONS:

1. Foreign Amateurs; remember, scores are based on the greatest number of Countries and Zones as well as

stations worked. Therefore do not concentrate on working only U.S. stations. This is a world-wide competition.

2. Foreign Amateurs; it is recommended that you give the call letters of the station you are working at the end of each transmission, instead of "BK" as this would prevent much QRM of stations piling on and calling you.

3. Overseas phone operators should indicate which end of the band they are tuning or which portion of the phone band (American or foreign) they intend to cover. This is extremely important on 21 and 28 Mc.

4. CW stations would greatly reduce QRM and speed up contacts by working stations OFF their own frequency. Likewise, U.S. stations should avoid calling "that rare one" on his own frequency.

XIII.—RULE CHANGES:

No changes from last year. See modification in Rule IX, Nos. 4 and 5 re awards. Also note definition of 8-hour minimum in Rule X, No. 6.

XIV.—LOG INSTRUCTIONS:

1. In keeping log, fill in Zone number and Country only first time it is contacted on each band.

2. Use a separate sheet for each band.

3. Keep all times in GMT.

4. All contestants are expected to compute their scores. Logs should be checked for contact duplications and proper point credit before they are submitted.

5. Make sure name and address is clearly noted on each log.

6. Each contestant must sign the usual pledge. Note sample contest report form.

7. If official log forms are not available, it is hoped that the contestant will make a duplicate form as illustrated. The size is 8 1/2" x 11" with 52 contacts to the page.

8. Copies of the Zone and Country list and log and report forms are available from "CQ" address listed below. Send a self-addressed, stamped envelope, or in the case of overseas stations, I.R.C. coupons. Make sure to include sufficient postage and state how many sheets are needed.

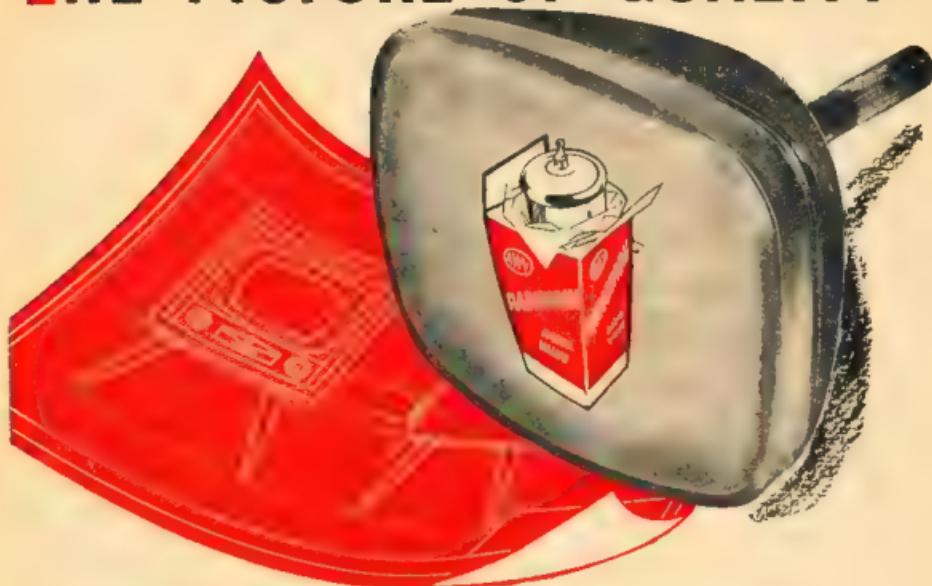
XV.—DEADLINE:

All logs must be postmarked no later than December 1, 1957, for the Phone Section and January 15, 1958, for the CW Section. Send all logs direct to: "CQ" Magazine, 300 West 43rd St., New York 36, N.Y. Attn: Contest Committee.

50 Mc. W.A.S.

Call	Cont. Add.	Call	Cont. Add.
No. Ctr.	No. Ctr.	No. Ctr.	No. Ctr.
VK3WJ	13 4	VK5AEE	10 1
VK3PC	5 3	VK5DXA	11 1
VK4WV	9 3	VK5GJM	12 1
VK4HR	2 2	VK5LCL	14 1
VK5LC	1 1	VK5ZED	15 1
VK5HR	3 1	VK5KHO	17 1
VK5DW	8 1	VK5LBC	18 1
VK5HR	7 1	VK5WWR	18

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S.W.L. SECTION*

NEW SOUTH WALES

Barry Cartwright, from Richmond, N.S.W. just missed the boat by one day last month with his letter. These notes have to be with the Manager of *Countryman* by now. Barry stated that he hasn't yet built a 15 mix converter, but has plans for building a G4ZM beam in the near future, evidently with the idea of really going hard after the DX. He is at present using a 15 mix converter with a three tube converter which should be in working condition very soon. Barry finds that 15 mix is the best DX band for him but is also very prone to QRM from ignition and power lines.

He guarantees that Richmond is the noisiest town in Australia and says that a Ham friend in his street will bear his statement out. Well, I don't know, Barry. I live on a main road with plenty of cars and trains and have an R.F. power line on top of me. I'd say the country boys are on top there.

Our next letter comes from Don Granthey, of Holbrook, N.S.W. Don, like Dave Jenkins, is keen on battery operated t.r.f. receivers. He has a 15 mix, the since modified an H1022 (AR4) R.F. battery operated t.r.f. which he says has proved itself. As proof he quotes the following logged on 20 m in the past few weeks: VV4, VVK, OH, DL, KLT, EA, VS, KEP, CZ. The antenna used at the moment is about 30 ft. of wire from chimney cable. The set originally cost Don 45/- so he evidently has a bargain. Don was a telegraphist in the R.A.A.F. intends to sit for his ticket in January under the urging of George 2ADZ. Hope you get through OK Don.

VICTORIA

At the Aug. meeting 22 members were present and we were pleased to welcome two new comers in Charles Saunders of East St. Kilda and J. Inglis of East Coburg to the Group. Election of office-bearers for the forthcoming year was as follows: President, L. Poynter Vice-Presidents, M. Ide, A. Stebbing, Secretary, I. Hunt, Asst. Sec., M. Cox. Council delegates, G. Robertson (W3W) and Noel Sinnbeck (VAN). Committee Chairmen: W. Woodward, M. Cox, I. Hunt, B. Stebbing, M. Ide. Official Observers: F. Nolan and G. Morris.

After business was disposed of, we were entertained by Noel SAWN with a film featuring tx hunting and another on the Melbourne airport, which included some shots taken during

* Compiled by Ian J. Hunt, WIA-L3007, 211 St. George's Road, Northcote, N. E. Vic.

ing the Group's visit to D.C.A. at Essendon. These were followed by some films in much lighter vein kindly brought along by Michael Ide. We would like to thank those two gentlemen very much for providing us with such an interesting evening.

The visit to the Newport Power Station, despite poor weather, was a great success. About 13 members attended and we were shown everything from the coal arrived at the power station through to where the outgoing electricity was controlled.

Recently several members in search of knowledge of Ham Radio visited the station of Bill Tregear, STX, Bill, who is always ready to answer questions when he needs to. The boys most keenly interested by showing them not only his equipment but also log books dating back to the early days of radio and other relics from the times when a big spark was the right thing. His story of days gone by and of his own experiences was something which they will not forget in a hurry. The boys went on their way fortified by a most enjoyable supper. We wish to thank you Bill and your good wife for looking after our members in such fine style.

On 2nd Sept. 26 members participated in a most interesting inspection of television station HSV7. Divided into two parties we moved gradually through the whole process of putting in the programme on the studio mobile film or tape to the final output from the control room. Quite a few amazed faces were apparent upon being shown the microwave transmitters used for relaying the programme from studio to transmitter up in the mountains.

The Group meets on the fourth at the Institute rooms, 191 Queen St., Melbourne at 8 p.m. on the last Tuesday of each month.

PAQUA-NEW GUINEA

This month we have a short note from R. Clarke, WIA-L8001, who informs us that the A.O.C.P. class is going along steadily and a couple of the chaps intend to sit for the exam in January, and hope with a bit of luck to make it. Bert Smith is looking round for a good receiver. At present he is using an Ekkko but it is not exactly suitable for Ham work. Laurie Howell is using a Pyle International and getting some good results although he has been very active in this month. Bert Clarke has been overhauling his ART and is pleased with the results. He is busy now building a pre-amplifier to try and break down the noise level which he suffers at his QTH. All the associate members of the Division have now been allocated a number, so it is hoped they will take a more active part and come to the meetings, thus making more news items available.

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YL CORNER

BY PHYL MONCUE*

In a letter received from one of our XYL readers, Jan Nitschke (Mrs SEN') we catch a glimpse of life at the SEN' location. Jan writes:

"Well the stork has at last dropped his bundle, another male harmonic. Barry Erwin by name, and the OM couldn't have been more pleased another aspirant for 'beam raising' thinks. Usually that has been my lot, but I must now admit that there is no way I could do more than a 12.30 pm when poor XYL is snug in bed and must get up 'in the cause of duty', practically life or death or some unbearable reason. After much agonizing and pulling on his sympathies, which gets you nowhere in the end, the beam wins, and for a week afterwards you struggle to feed 'the brute', while in the grips of the 'flu', and all the sympathy you get from the OM is 'well, don't you look after yourself, stop gallivanting about on night flights'."

"Anyway I really do feel it's a great life being an XYL and I must admit there is usually a scramble to get hold of and read 'Amateur Radio' first. Even our 18-month-old harmonic, who has never shown any intense interest in Amateur Radio and knows which way to turn knobs and pull out plugs and of course has to have his say over the mif, but just how I'm going to stand it in a couple of years with three of them annoys me. I don't know. As it is now I'm dragged into the shack to wind coils till my eyes nearly turn inside out, but I'm assured that one day I will get my corner cupboard in place and be an amateur for two years for my hand basin in the bathroom. I can believe anything."

"Quite honestly though I must admit that I have been very disappointed in the art of Ham Radio and I really don't like it when my eyes open. You see a week after I had first met my OM-to-be, he arrived at my home complete with gear, Morse key, etc. At this time he was bedded in the 'best' bedroom, but was still sleeping in an old, dark, 'tubthick room'. It was no time at all and VIKSEN was boldly nailed in large letters on the door. Feeders lines were strung across the room, out the window and up the wind-light tower. We had to wonder why lights went dim when SEN was testing. I was made QSL manageress and was quite horrified with the position, but if I had only known then what I was up for, perhaps I'd have been less surprised. I have since heard that he has up a mere 500 which he says I can do so easily but believe me I don't fail to detect a certain amount of she's got nothing to do all day" syndrome in the OM speeches."

"With the OM thrown out into the world when he shows visitors to the shack and they see the neatly labelled files and tidy shelves, but it's just that I'm too ashamed after he's been in there wrecking things as he's so dreadfully untidy. I have tried to get him to clean up to please him but it has taken on a new 'sparkled' pattern, which I strongly suspect to be solder which flies in directions when he is busy 'converting' something."

"We are going to Sydney shortly so the boys up there had better wire their tools to their benches in case my OM decides to 'dig up a Ham'."

"Good wishes to the column. I never miss reading it, and I'd like to send it to all the other readers.—Jan Nitschke."

* 238 Union Road, Ascot Vale, Vic.

C.D.E.N. NEWS

The value to humanity of Radio Amateurs in an emergency is highlighted in the release of a new film "Round the Lake". The story is written around a drama at sea and the part played by Radio Amateurs in the rescue operations. Radio Amateurs in Australian Capital Cities have been given the opportunity of seeing a special preview and a gesture by the film's distributor and exhibitors.

Divisional Co-ordinators are now in possession of up-to-date information on C.D.E.N. activities and after Divisions have had a chance to peruse and criticize "Instructions to C.D.E.N. Operators" and the first draft "Authorisation Card" steps will be taken to circulate both to members of C.D.E.N. through Divisional Co-ordinators.

Hereunder are Rules regarding Initial Action and Co-operation. Discussions relative to new news will be included in next month's C.D.E.N. news.

INITIAL ACTION and Co-operation

1.1 The first action of any Amateur is to advise HQ, Control Station via any available channel, of an emergency as developing and indicate to whom he has offered to enlist the services of C.D.E.N.

1.2 The Amateur or Amateur shall then advise the Officer or Officers concerned that WIA C.D.E.N. has been alerted and that he /she is in a position to handle traffic in such places as directed by the Control Station or necessary.

1.3 Other stations in the affected area will respond to the control station for instructions. Requirements may include handling traffic, monitoring frequencies, or intercommunication with other services.

1.4 All messages handled from an emergency area must be authorised by the person

FIFTY-SIX MEGS. AND ABOVE

(Continued from Page 14)

which my spy most likely could copy if the beams were directed at him. I have gone mobile, and the one most consistent that way is SJS, who uses a 626 outfit. The mod. osc. is still the method of tx, no xtal outids about yet on mobile, the trusty CV5 or T107 tubes being the basis.

There are some newcomers on 1 m. We congratulate Alf SZAL, Al SZCR, George SZDF, Brian SZBN, and it is known that there are others who have just received their call, but have not been around much. They will, it is hoped be in touch in time for next report.

Graben SZB behind us on 1 m. recently with quite a nice signal from Lockleys. The W.I.A. session is put over regularly by one of the boys for the benefit of all and sundry who cannot tune 40 m.

John SZB has gone quite quiet about antennas lately, rumour has it that he has been experimenting with a jet-propelled bat chair so that the "old dodger" can keep up with things generally. He is also building up a new low frequency antenna system.

With warm weather approaching we expect more activity from the mobile gang—hope to work Joe SZO on the band again soon.—SKR.

WESTERN MURTHAIA

The V.H.F. Group meeting on 3rd August was held for the first time in our new rooms at D.C.A. Amateurs Section. The business section of the meeting disposed of, we settled down to listen to two lectures, one by Alf SRA, and another by Roilo SBO. Alf's subject was transformer construction without elaborate test gear, and the boys enjoyed it. Roilo was on crystal grinding—theory and practice—the latter part coming from experience. Again the boys will be involved.

The Fox Hunt on 24th August was again very successful. Dennis SAW was the fox. It was a close go as three cars pulled up at the site together. The final placings went to Ralph SZAD, Jack SZBZ and Dennis SZAV. There is a record of a round trip of 1000 km. finished up at the wrong end of a shotgun. An irate householder must have thought someone was trying to punch his clothes line—evidently mistaken for a feedline and being followed back to the right place.

Jack SZBZ has been on 56 Mc since receiving his call sign and as he remarked, he is a bit mike happy. Roilo SBO and Wally SWG still check the 256-mile path to Albany on 144 Mc every morning. Tom SZAV reported in when available. Roilo SBO reported that a signal from Tom SZAV was received in Perth on 56 Mc—a distance of 90 odd miles—from a tripler—SZAV.

listed on the Authorisation Card, whose signature on the Authorisation Card and initials on messages should be obtained where possible.

1.5. The initials of authorized deputy will suffice on messages.

1.6. Locking the authorisation as above, the Amateur may originate or accept such messages which plainly indicate that they are of a genuine emergency nature and can be substantiated by C.D.E.N.

1.7. All initial calls to be made on guard frequencies (560) KC, 762 KC, etc., but traffic is only to be handled on assigned net frequency.

1.8. All stations in the area, adjacent areas and wherever reference to emergency channel is possible are to be advised of the net frequency and should move immediately when requested by station detailed to guard channel.

1.9. Co-operation with other services will be given willingly upon request and Control Station notified of action being taken.

1.10. The Control Station will at all times exercise overriding control of network activities. All stations in the net will refer any queries to control for advice and decision.



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Flicker or shrinkage of the Television picture often indicates a low line voltage, leading to complaints of unsatisfactory reception, or to difficulty in adjusting the receiver controls. This condition can be reproduced with an A & R Voltage Adjuster, the indication being the lowest possible mains voltage for good reception. The mains taps on the Receiver can sometimes be adjusted to suit, provided the voltage is consistently low.

There are many other applications for the A & R Voltage Adjuster, such as, correction of input voltage to Amateur Transmitter and Receiving Equipment, Tape Recorders, Hi-Fi Audio Equipment etc., provided that load imposed is within capacity of adjuster. The auto model is quite suitable for these applications.

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Servicemen will find the double ground model an invaluable aid when servicing transformerless T.V. Receivers. The Receiver under test can be safely isolated from the mains supply, thus affording maximum safety and a safeguard against possible damage to valuable test equipment. A separate earth terminal is provided for earthing the receiver chassis to the adjuster if desired.

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Victoria: Homecrafts P/L, J. H. McGrath & Co P/L, Radi Parts P/L, Warburton Franki, Motor Spares Ltd, South Aust: Gerard & Goodman Ltd, 196 Rundle St, Adelaide. Qld: A. E. Harrold, 123 Charlotte St, Brisbane; Messrs. Chandlers P/L, Cr. Albert and Charlotte Sts, Brisbane. West. Aust: A. J. Wyle P/L, 1064 Hay St, Perth. Tas: Homecrafts P/L, 220 Elizabeth St, Hobart N.S.W.: United Radio Distributors P/L, 175 Phillip St, Homecrafts P/L, 100 Clarence St, Sydney.

FEDERAL, QSL, and



DIVISIONAL NOTES

FEDERAL

WEST GERMAN AMATEUR ON 4 METRES

A limited number of West German Amateurs are to be allowed to operate in the band between 70.3 and 70.4 Mc during the LG.Y.

It is understood that D.A.R.C. have applied to the West German Government for permission to operate a special LG.Y. station using the call DL6IGY, but no details are available.

SCATTER RESEARCH PROGRAMME

DURING 1957

During the International Geophysical Year a research programme on Ionospheric Scattering will be conducted by Scientists and Radio Amateurs. A scattering and propagation station will be installed by the American National Bureau of Standards, and will operate in the 50 Mc band. Transmissions will be beamed Northwards and Eastwards from places in South America. Radio Amateurs have been asked to report reception of these stations.

1956 I.T.U. CONFERENCE

The Administrative Council of the International Telecommunications Union has set the date for the opening of the radio conference for 1956, July 16th, to run for a maximum of five months. Germany last year tentatively chosen as the conference site, has been confirmed by this year's meeting.

FEDERAL QSL BUREAU

In a letter covering the forwarding of QSLs the President of the Teknik For Allas Eterkubb, of Stockholm, Sweden, states that the Club is the greatest DX club in the world and has 20,000 members, while the technique magazine has a circulation of 70,000 copies.

The Denver Radio Club announces an award called Mills Hi Award. This certificate is available to all Amateurs who contact 35 stations located in the Denver metropolitan area. Ten of these contacts must be with members of the Denver Radio Club. For the contact claimant must send to the Club at Box 356, Denver 1, Colo., U.S.A., where they will be checked against members' logs. Additionally each claimant from VK will be eligible to receive one year's subscription either QSPR or QSPR Renewals. Subscriptions may be gained by completing the required contacts with an additional 25 different stations to those originally submitted. No information is given as to the retroactivity of contacts.

A card has come to hand from France for VK49J whose address is given as Cocos Keeling Islands. Name of VK49J is given as "Miss". Time of contact which was on c.w. 16250 on 1st August, 1951, is given as Mc. Maybe "Mc" is a short form of VK49J.

Cards have come to hand from UAIKAE located at Mirey Base, Antarctica. The operator, George Minnow, is now back in the U.S.A.

VSPG was operated from March 20 to May 27 by several W4 operators. Location of the station was the screened-in front porch of the Bayview Hotel, Georgetown, Grand Cayman Island, in the R.W.I. The station was on the 100 watt spot and 1000 watts and 4,100 contacts were made with 1,662 different stations on five bands. One 45-hour period of operation yielded 2,665 contacts! "Hailfusters" equipment was used throughout and the antenna system comprised a 100 foot tall ground plane dipole and a vertical. Any VK not yet having received his verification can obtain same by writing, Don Chesser, R.F.D. 1, Burlington, Ky., U.S.A.

Ray Jones, VK3JL, Manager

NEW SOUTH WALES

The August meeting of the N.S.W. Division was preceded by a Special General Meeting to consider the proposed changes to the Divisional Constitution, as directed by a motion made at the previous annual general meeting. About 60 members were present when the Chairman, Percy Healy, 2A9Q, opened the meeting at 8 p.m. Several letters from members unable to be present were read on the proposed changes. These were followed by a recorded speech by the Federal President.

The Chairman then outlined the history of the proposed changes quoting extracts from institute records and discussions had with the Division's Hon. Solicitor.

Many of the members present spoke on the desirability of making any changes, others thought that while some of the proposed changes were quite in order, others were deemed unnecessary. Finally, after an hour and a half's discussion, a motion that "The matter be referred back to Council for further consideration by them to be reported at meetings at some future date," was moved and was carried by approximately 5 to 1 majority. During the discussion on the motion, the Chairman indicated that Council had, when the matter was first discussed by them, thought the proposed changes could be dealt with by a Special Committee.

The time taken to dispose of the Special Meeting did not allow time for a lecture at the normal monthly meeting as several items of business had to be cleared and the caretaker was asked at the door to indicate time had run out.

However, the following new members were admitted: H. Y. Powell, VK3AYP; C. Fletcher, VK3ASF, and D. O'Dea, K. G. Scott Assoc.

The Secretary informed the meeting that the order of the mast and tower made to the O.T.C. had been received. These will be removed from the Pennant Hills Wireless Station and re-erected at 2W1 at Dural.

A motion objecting to Council's action in regard to the QSL Bureau was discussed at length, but after the reasons for the action taken had been given, the motion was defeated by a very large majority.

Coming Divisional events are the V.H.F. Spring Field Day on October 6 and the Hunter Branch Field Day at Blackalls on October 8 and 9. The South Western Zone Convention will be held on October 20 and 21 at Coolangatta. Full details of these events are given in other section of this issue. Members are invited to give these functions their support and join in the activities. Take along your family and friends.

The Field Day, which for the last few years has been held at Woy Woy, will be held this year at Gosford on Sunday, 6th October. The change of location for this function should prove a very popular move and will be held in the Gosford Sailing Club House with a large picnic area alongside and the Olympic Swimming Pool. The distance is about 10 miles closer to both Sydney and Newcastle by road than Woy Woy and only a few minutes further by train. Keep this date free and see next month's issue for further details.

As was indicated in the last issue, Vince Cahill 2V0C has been re-opted to carry on as Treasurer for a short time. Council thanks go to Vince for his efforts over the past 18 months and hope he has a long trip north. To fill the vacancy 3QG, Ced Smith, who has just returned to VK3 after spending a year in the U.S.A., has been given the task of looking after the financial side of the Division. Those of you who know Ced are no doubt aware of his ability in this line of business.

The Division's C.D.E.N. officer, Roy 2HO, is busy preparing details of proposed scheme for the VK3 Division. This will be sent to members for their consideration in the near future. Roy is also due to attend the C.D.E.N. School at Minedon, Vic., in October.

Remember to note the dates for the functions given and even if it is not possible for you to attend, lend a hand for stations operating at these functions and join in the fun.

WIRELESS INSTITUTE OF AUS. HUNTER BRANCH, N.S.W. DIV.

SIXTH ANNUAL

FIELD DAY

BLACKALLS PARK

SATURDAY and SUNDAY,
5th and 6th OCTOBER, 1957

*

Registration: 12/6 OM's, 2/8
XYLs, Junior open free.

HUNTER BRANCH

Thirty members and visitors attended the September meeting of the Branch to hear Mr. Mondel from the School of Electronics and Communications lecture on "Impedance Matching," and also to view a film of the effects of a Hydrogen Bomb blast. A very enjoyable and educational night was had by all present.

Mac O'Brien, a keen country assoc., had a string at the field day, but the old noves played up. However Mac's a good timer and he'll make it soon. He's built himself an all-band rig with plug-in coils and is converting a 522 Rodney 3CN in being heard more often as local vacation press and first study. A few weeks ago he built more 522's and a 522B BAGD, keep it up George. Ernie 2FP is very elated as his beloved 10 maz has opened to Europe in the evenings, and he worked ZC4 for the first time. Sociey Sec. Gordon Holland had a new radio G lamp and a manual for his 2A3 rx. He kindly advised Ron 2ASL who has the same type of rx and now, thanks to Gordon's tip Ron has a manual too. Ron 2ASL with lady friend attended the open to see "Tales of Hoffman." Due to a family illness, and as he had to leave the open early, he took VK4 to be the spend his evenings enjoying the open at Ron's 2A8A's place of toll. Following in Harold 2AHA's track, assoc. Jack Hamilton "the Mayordomo" went to Ron visiting the New South Coast zone calling on 2E9, 2XO, 2A9, Bill 2A9Y, Noel 2A9H, and the Grafton boys. According to 40 mz grape vine, all the YLs went bush when they heard that "Gentleman Jack" was coming. Jack's main purpose was to call on the Hunter Branch Field Day, was to advertise the Hunter Branch Field Day.

Lionel 2C8, the operator of the Branch station 2A9X, has been on holidays in the big smoke and other places. Jim 2AHT has graced VK4 with his presence and was holding court in the usual back room. Goodwill still reigns, but the new radio 2A9X is not yet proofed to our Secretary Charlie 2ARV managed to work some DX while at home for a week with mumps.

It is with much regret that we note the passing of Mr. Sturt, the father of Ron 2ASL. Ron's father was known to everyone who visited Ron or who had worked Ron on the air. Mr. Sturt always had a word of greeting for any of the local boys who contacted Ron. Rest in peace, Ron. The Hunter Branch sends its deepest sympathies to Ron and his family in their time of sorrow.

The Hunter Branch Field Days will be held on Saturday and Sunday, 5th and 6th October. The programme will be published in August "A.R." A large attendance is expected and a large number of prizes are to hand for the various contests. Some of the donors of prizes are: Lawrence and Hansen, Martin De Launays, Radio Television and Hobbies, Chris 2FP, Radio Corporation, V. Ardy 2FP, and others.

Don't forget to get the latest station 2A9X can be heard at 3000 hrs every Monday night on or about 7050 Kc. Listen for the latest Branch activities.

The next meeting of the Hunter Branch will be held at the University of Technology, Tighes Hill, at 8 p.m. on 11th October.

VICTORIA

The general meeting for September was held at the usual place on the second Wednesday instead of the usual first, and President Fred was back in the chair after his recent illness.

W.L.A. SOUTH WEST. ZONE N.S.W.

FIFTH ANNUAL

CONVENTION

at COOLAMON

26th and 27th OCTOBER, '57

*

Book Early for Accommodation

you Bairnsdale boys. What about some contacts on two m.w.? Allan should be able to supply the requirements.

Allen Hougham of Tammam is now a holder of an Amateur license. Good luck! Fred Allen IAN 3AAV is now on five bands using an 813 with 100 watts and will be changing QTH shortly to Moe. He will then put up a few beams and towers. During the month, George ZCGG planned to change his QTH from Moe to Moe. Cliff put up a good score in the R.D. Contest. He had over 300 contacts. We understand that Bert JBB, Ron JPR, Graham 3GZ, and David JDY also had a few contacts. Well all with Graham a very enjoyable trip to the French Pacific Islands.

WESTERN ZONE

Our Annual Zone Convention will be held in Warracknabeal on Sunday, 25th September. We will meet at one of the local hotels for a dinner, meal, after which will follow the meeting. The afternoon will be taken up with a tx hunt on 80 mxa and a scramble on 40 mxa. Any folk with other high frequency gear are asked to bring it along as everyone will be invited to see it.

Trev 3AAR has been contacting Chas. GAB on Davis Island regularly on 21 Mc. Herb 3DN, of Yanac, has had more than his share of sickness in his family recently, and we offer him our sympathies on this. In fact, George 3DZ of Number, one of the regulars in our hook-ups, is now getting the parts together preparatory to building a converter for v.h.f.

QUEENSLAND

We were very pleased and fortunate to have present at our last general meeting our Federal President, Mr. Bill Mitchell, 4UM. He very kindly brought the boys up-to-date on quite a few matters, which far as VK4 was concerned) have been "in-the-air". After the usual preliminaries were over the meeting quickly moved to discussions on available equipment and methods of reducing costs. Without a doubt, disposal by ballot was the fairest, but as the finer points of difference arose concerning the eligibility of Limited Amateurs to ballot for low frequency gear, it was suggested that the matter be referred to Council for full investigation.

There were some doubts concerning the decision to provide the technical library with some disposals gear recently purchased by tender. It was thought that this would deprive the country Amateur of extra gear, as the technical library is in great demand as a resource for the city Amateurs. However, as there are no rx's nor auxiliary tx's in the technical library to provide a complete working station, it was pointed out that should 4W1 at some future date be transferred to VK4 QTH, where possibly the new operator did not possess a good communications rx or perhaps was not able to make his own station rx available, then difficulties would most certainly arise. Also in the event of emergencies it was thought that two suitable working stations would be available at short notice.

Sian 4SA announced at the meeting that his A.O.C.P. Class will commence on 1st Oct. His plan is to cover the course in three months and spend a further three months in revision. This will enable candidates to sit for quarterly examinations and not make things too difficult for students joining the class during the course. Sian also hopes to have his course in the evenings. I am sure that this has been extremely well organised, under way by next May. This venture is something quite new in VK4 and Sian for his own efforts is to be sincerely thanked and given all the cooperation he requires.

An approach has been made to secure other meeting rooms in order to conserve our finances. There are a number of rooms available at the George St. University and although it is not the policy of the University to grant rooms for organisations not allied to it, a spokesman said that our request would quite possibly be favourably received.

Unusual sunspot activity and surd disturbances have severely restricted communications in certain areas and signal communications with us were on all bands. As there are only a small number of local operators on 5 mxa, information concerning the 3 mxa band, particularly (as requested by Geo-Physical Prof. Webster) has not come to hand. We've been in touch with some interesting gentlemen who, incidentally, are "rearing to go" on 5 mxa, will fill the gap in VK4 as far as the Geo-Physical Year is concerned.

We had quite a gathering at the last general meeting and the first for information results peppered our Federal President, Mr. Bill Mitchell, 4UM, with questions

Bill first gave a general resume of Federal activities and pointed out to us, as indeed we have proved to ourselves, that unity is strength. The reason, he said, for the delay in publishing the results of the Convention was caused by several factors. First, over sixty type-written pages of footscap had to be translated from short hand notes. Secondly the memorandum then had to be edited and put into presentable form. All this was done in the spare time of several members and although there was a delay, considerable savings of publishing expenses were effected. Bill also stated that an extremely large number of interesting discussions and talk at the Convention and the delegates found very little time to enjoy the sights after the day-long meetings finished around midnight!

It was pointed out by a local member that the International Convention was held at a time when the finances (which had been planned before hand) of Divisions generally would be at a low ebb. This was due to the fact that the Convention was held near the beginning of the financial year and subscriptions from members were only just beginning to come in. Consequently, large expenses at the time were not convenient. Bill said in reply that this point, which was quite a problem, would in future be taken into consideration.

Also Items of C.D.E.N. were given considerable priority by the Convention and Bill informed the meeting that this plan, in a general way to have sets of circuits drawn up and standardised. This equipment could then be rapidly produced, should the need arise, and thus provide equipment of a quality available for the Amateur. C.D.E.N. also schemes were preached from many practical angles and at one stage a completely transistorized transmitter was considered. However, as is usual with most things, finances have to be kept in mind and the standardised transmitter scheme eliminated the huge expense of firstly having, say five hundred units manufactured, and secondly, maintaining and modernising the units as time went by. As things stand, all alterations are made to the circuits to keep them up to date.

Bill also informed us that the next I.T.U. Conference will be held at Geneva in 1960. It will commence on 1st July and will continue for two weeks. There is a strong possibility that the Amateur fraternity may obtain some space in the spectrum. It was suggested that unofficial representation (by the W.I.A.) at the meeting concerning Amateur activity should be made. The cost of sending a delegate would be high, however, an estimate being £1,200. After serious thought you will agree that this amount (approx. £1 per capital) would indeed be a small price to pay to maintain our position in the eyes of the world. A delegate to this Convention would need to be retained for the duration but for approx. two months.

There were also many other items of interest which Bill mentioned and which will be published in due course. However, we on Council particularly were very grateful to Bill for the information he gave us. A vote of thanks was passed to Bill at the meeting by the VK4 President, Mr. Frank Bond, 4ZM, who expressed the hope that it would not be quite as long before Bill visited us again.

Of interest was the first trial run of the C.D.E.N. which took place on Sunday, 25th August. The show started at 8.30 a.m. when an "almon-bomb" fell near the Storey Bridge. Immediately v.h.f. links were called in and both b.f. v.h.f. mobiles began investigating damage in the city. HQ, 4W1, was established and communication was established with all local sectors and with VK4WIL who by this time had the country network in full swing. Some of the boys in the city nearly "died" from exposure to radiation while trying to recuperate cirrus animals which broke loose during the ensuing mael.

All in all, the network proved very informative and Vince 4VJ as chairman of the Emergency Committee did a great job. I am sure we will do at the success of this our first trial run. There are to be other emergency runs, which as we become more experienced, will themselves become more complex.

Other sectors may possibly be called into the emergency net to provide exercises in developing resources and extending the hand of co-operation.

Council wishes to thank all those members who participated and the distance. Future meetings of the Emergency Committee will tabulate the results obtained. So be prepared! You may not be informed when the next run is to take place.

TOWNSVILLE

I expect I am like the others in writing these notes, always wishing that some of the boys would help out and pass along some

news, either about what they are hearing, working, or their latest project theory on how to achieve more gain from their antenna, etc. The last meeting of the T.A.R.C. was well attended and a productive meeting. Bill from the R.A.A.F. put in an appearance. He has left Ballarat but his name slips me for the moment. More about this next month. John 4DD was well to the fore again in breaking new ground when he suggested a new exchange gear. No doubt he heard all about our Secretary Ted's hoard of gear accumulated over the years and his disposals.

It is hoped that two associate members will face the barrier for a Z call sign next October and here everyone is wishing them the best of luck. The latest news on our own members on 44 Mc. has been broken and 2AZK and 4ZAK have been heard at this QTH. So far no signal from Charter Towers, but Colin 4CE is going to try and pump a signal from Castle Hill, 800 ft high, back to Venus at the top. He has been very busy as far down as Mingen 30 miles before dropping down the range of mountains. Ted 4EJ and Rex 5LR are anxiously awaiting the arrival of disposal transceivers and blame the slow delivery on our railroads. I can take it boys.

Visitors to my shack the past fortnight have included Frank 3AAR, ex-4AE; Reg Frost ex-YJ1R, the New Hebrides, who regarded the doing there and about the old miners YJ1R, Fred Potts, who visited the locals trying to help me along the road with 144 Mc. gear. Allan 4PS on the air the other night testing with Ted 4EJ, Basil 4ZM from Cairns provided me news of their doings but for a direct hit.

Bob 4TK had a flying holiday down this way. Passed the shack and did not call in on his way to the Towers where he found it too cold for his liking. He hurriedly left after a short visit and I heard him say "I'll be back to Home 4H before returning to Innisfail. Ken 4DX blew in a couple of times and was unlucky to find me at work each time. Better luck next time. Bob MPAAC, ex-MF2AA, together with V830, ex-MF2EE, are looking forward to renew talks with all the VKs they have worked at the old QTH.

SOUTH AUSTRALIA

The "Members' Display" Night attracted a very large gathering of the clan in VK8, including visitors from Gland, one Joe Brown, G3JAE who was spending some few weeks in the State. Others were Jimmie Rogers, 4W1, Peter, 4W1, David, 4K9, Ken, 4W1, Eric, 4ZXY, Thomas, Parham, Joyce, and finally Harry 5M7. We always welcome interest like that, particularly when, as we learned last night, that those who thought they had the dotted line and sought membership.

Each member who had gear for display was required to give a short talk on it, why he made it, what it did, and to use Secretary Brian 3CA's words, "tell us why it worked". This was done in varying degrees according to the varying skill of the speaker. Jimmie noted that the Junior member 4XV, whilst he may have put Pop in a couple of times, handled the matter like a veteran. So look out fellas if he gets on the mike on 40 mxa at the next meeting you can be sure he'll be the best.

John 5LT showed us an R.C. Bridge he nearly finished, which with a separate amplifier and power supply, will be a most useful set-up. A very small and compact diode wavemeter also splendidly made attracted attention, and a 400 m. wide band 40 Mc. to 100 Mc. with a separate 150w power supply was much admired. Finally, he had an if oscillator for 435 Mc. same being metered for checking and fitted with attenuation control, being powered by the 40 m. power supply.

The judges Messrs. Petersen, Archerfield, and Heinrich awarded John the prize for the Test Gear Section.

Malcolm Goodridge had a very nicely made Coxon V830 Wavemeter to show, having a range of 200 to 300 Mc., using germanium diode and a 250 microammeter. Claims accuracy to within point one per cent.

R. G. Edmonds gave us a look at his transmitter, wavemeter come multimeter which is a lot more like a home built one. A 200 microammeter as a home built one, he can adjust to take readings up to 2,0000--a very useful piece of gear.

Frank Forgie won a prize with his V.I. transmitter, a small class job, too, which he made from circuit obtained from "R. & R." The accuracy of measurement has been checked against a commercial unit and found to be right on the nose.

In the hands of Lee 3AX, Frank also displayed and described a pre-amp sent in by Les. One of his famous designs that has

proved so successful in raising signals and lowering noise.

John EAG had a simplified receiver using standard SABA 507, 6S77, 6S77, 6M5, and with separate controls on ant., osc., and r.f. Certainly a departure from gang tuning, but with a vernier control on the osc., claims many advantages over the "more complicated" orthotetrode method, a vacuum plate chassis 15g steel provided a better firm base which was completed with plug-in coils.

Remember all the arguments about the SMD modulator for the Type 37 Well. Don answered them all by building a Type 37 and the mod. along and connecting stages up (for a dummy load) and demonstrated that it does modulate "upwards", in fact he was asked to tune for "downwards" which some claimed did not fit them, and found he couldn't. Considerable work was put in for, off, for \$19, one 8V6 and a 10K3 c.t. speaker transformer is about all that is in the little gadget.

Gramme 5XV took a prize with his v.h.f. converter which covers the 86, 144, and 222 m. bands. Once more, the multipliers do the trick with separate r.f. stages for each band. It would hardly be fair to repeat what he said about the OM, and how he "assisted" in the neutralizing process, so we leave that out.

Tom 5TD had a wavemeter made up from BC375S 6S37, 6S37, osc., 6XK3 mixer, 6J7 audio, a really first-class job too, and at question time most wanted to know when it could be seen.

Les 5XN completed the display by showing us the progress on his new tx, t.v.i. proof to the last detail. A very attractive blue ham-metone stage and chassis work gave a professional look, which the circuitry followed all the things T.v.i. Committee have hammered into us for some time. All coupling between stages is inductive, power in osc. and multiplier stages kept low (none higher than 1 to 2 watts), bypassing and shielding of power leads carefully planned.

A SAGT Clapp osc. cathode followed to E950 multiplier stages, an 807 drive on final frequency with an all-band tank circuit drives a pair of 6145 in parallel through a pi-coupler to final plate.

The many questions asked re this display indicated the interest shown therein and to the fact that a lot are keen to do the same job. Laurie, of course, received the award for that distinction.

By and large a most successful programme which the boys would like repeated.

The formal business concluded the gathering, the most important section of this latter part being acceptance of the following new members: Mr. Michael C. McLean, 1200 1/2 Washington (SD2D), H. S. Young (SDU), D. F. Dawson (SDK), and C. Luke (SDX), with Associates: K. M. Hill, Mr. C. Bills, Mr. R. Williams, R. J. Smeeton, and Mr. Burns.

The member voted the one "most likely not to be broken into" had his record shattered recently by receiving an unwanted visitor. Guess who? Don SMD. Fortunately, a noisy entry or attempt attracted the canine watch who set up barking until his precious 812 is still intact. What no hars on the shack window? Shame on you Doc.

It is proposed to start up another A.O.C.P. class to follow the present one, and that keeps the collating and printing present lot to finish late October an early indication is needed from those intending to enrol to enable the organising to proceed. Let Brian SCA know your wishes or Norm Coleman in any case. If it looks like same cost as at present, then a whole course or a division of subjects is available.

Bob 10M paid President John and Secretary Brian a visit last month when Institute members generally were there over.

The R.D. has been and gone again (hope you have all put logs in by now) and from it a few more lessons learned. One of them being the "life" the bands have when contacts are on, and why keep it up through the year. All contacts will provide some excellent signals heard, and some very good operating procedures noted, particularly from some of the older chaps. It would not be fair to name anyone, but it was refreshing to see that the young were not having the contacts and the few who may not have attained that standard must have learned a lot in the 24 hours.

Congrats to Federal Council for introducing the opening ceremony.

WESTERN AUSTRALIA

At the Divisional meeting on 20th August we had a very interesting lecture by Mr. S. Cooper of A.W.A. on the subject of "Commercial Application of T.V."

Another R.D. Contest is over and though scoring did not appear to be as high as last year, the bands were pretty crowded. It is surprising the number of local calls on the air at this time, who are seldom or never heard during the rest of the year. No doubt the Contest is responsible.

SMK is active again after about a three-year absence. He borrowed a tx and after a couple of weeks made a wide call on the chimney, the radio being really hit again and he was soon happily digging in the junk box and rigging up a 66 ft. centre fed in the garden! If 8AJ goes off on the air soon for a short time he will be changing QTH and hopes later to be on with a higher power and then on 20 m. Meanwhile he has worked VUERM on 40 c.w. with his QRP rig. In a recent radio programme 7ESF was asked how he liked the boronite. Thinking of his recent trip from the C.I. Dan had said "I have a few more money funnels has it got?" I believe for several posts he received sprigs and parcels of boronite! Now he is looking forward to a visit to some country Ham where he hopes to sample emu steaks and roo-tail soup!

August has been noticeable for the way in which South African have been worked from VK6 on 80 m. in the very early mornings. 6M6, 6CL, 6EJ and 6LG were heard in a round table QSO with reports running up to 28 plus both ways on phone. 28s worked from 6M6, 6CL, 6EJ, 6LG, 6CV, 6OM, 6PM, 6YC, 6GN, 6QK, and 6VO.

6LJ swung a very beam in the direction of Canada and has been working lots of VE and KL7s on 30 m. at good strength. 6HU is now on a.s.b. and I understand will discuss the design of this type of equipment at the September meeting.

6MK was unfortunately on the sick list during R.D. Bad Luck Tvm, hope you will be OK again before this appears in print! 6AG has re-built his pre-amp, with very pleasing results.

The Sunday morning 5W6 broadcasts on 40 m. are giving better coverage than last year, conditions on that band being better at 0630 than they were. Wally is to be congratulated on the excellent work done and his service to the Divisional committee to be especially appreciated by country members.

TASMANIA

NORTH WESTERN ZONE

How are the "mums"? At the time of writing there appears to be a fair number of reports saying that the crop is extensive and prolific. Even Jim 170 has been laid up with them. Never mind Jim, we've got them in the house too.

Allan 160 Lockett is apparently getting some practical knowledge in at Devonport by visiting Ted 1EJ. How's that rx Albo? Hope you don't go the same way as Max, our Secretary, and can't decide what type to build. Phil 1EJ has been working 6M6 and 6EJ too, perhaps we should have R.D. Contests more often, and we might get a few more of the old shellbacks out. Leon 1JF, at Queenstown, lashed out recently to the extent of a new motion picture transformer. Should be able to modulate that kilowatt without any trouble now Leon.

Heard Ellis 1WA on 40 m. recently, so I guess you have got that home-built Colline 75A working on the other bands as well as 15 m. 15 m. Ellis. How about a write up for "A.R."? A few QSLs have come in from the C.I. Dan on the percentage of modulation. Let's hear you on 80 m. some time Chas. You should have that 813 stoked up to by now. That's probably right stoked up—they take 50 watts to heat them. One of our southern members heard on 80 m. during September, possibly 1EJ, possibly at Scamander on the east coast. That 4 watts was getting along this far. Tiny, sounds a fine job.

There seems to be a general exodus of VK7s lately to VK3. While talking to 1EJ, 1WA broke in to say Allan ex-1CJ was in the shack. Pleased to hear of you Allan. Let's hear you from your own rig sometime. Not much news of t.v. this month, but nothing but an advertisement for the sale of a travelling wave aerial. Apparently home made ones are best, Jim.

PAPUA-NEW GUINEA

The new Secretary is Norm Casey, 8N7, and President is now Frank 9TN. The QSL Bureau remains the same. Norm is with the Post & Telegraph Dept. and Frank is with the P.M.G.

The Division is steadily growing and a new corner is Doug 8SD (ex-5E8). Welcome to VK3

Doug and may your stay with us be a happy one.

It was good to hear so many of this Division take part in the R.D. Contest, although conditions were not the best, many went the full distance and put up a respectable score. Hope to hear you all again in the VK7 Contests chapter.

"Funny Noises" making some queer noises as he is packing to go south on leave this month. 8AT was heard taking a cook's tour with portable the other week. Claude 9T2 was heard on 1/9/57 working 7 Mc. with a 100W. 6M6. 6CL. 6EJ. 6LG. 6OM. 6PM. 6YC. 6GN. 6QK and 6VO. Claude 9AMZ is busily trying to extract 1 kw. out of a pair of 6146s with input of 100W. Should hear Horrie on the air shortly. 6SF is back from the C.I. Dan has now made his DX to the U.S. Reg. You can't have all the DX in the U.S. Reg. A special welcome to 9WV, it's nice to have you back on the air with us. Charlie 9E seeing you around. 9D8 doesn't get around much and more since he took up golf. Believe me he has been down at the 18th hole, that true Doug!

Carl is very active, but not on 7 Mc. would like some DX at that time of day. John 8KT and Les 8EJ are on leave and are expected back shortly. The other young boys are very active getting in a plenty of DX. 9EKK has been declared champion of the brass pounders club. Wrists are very easily broken Russ; better come up on phone for a while.

Now that we are in the news again, chaps, let's hear you on Sunday mornings so I can make this the best column in "A.R."—R. Clark.

HAMADS

1/- per line, minimum 3/-.

Advertisements under this heading will only be accepted from Institute Members who desire to dispose of equipment which is their own personal property. Copy must be received by 8th of each month and remittance must accompany advertisement. Calculation of cost is based on an average of six words a line. Dealers' advertisements not accepted in this column.

COMPLETE Station for Sale, comprising Eddystone 750 Receiver with matching speaker and new 669 "S" Meter. Transmitter p.p. 807s on Eddystone rack and panel, v.i.o. control, Modulated by pair EL34s. Also A.W.A. 2" Oscilloscope. A.W.A. "C" Type Wavemeter. Type 3 Mk. II. Transceiver modified for relay operation on phone, press-to-talk, 12 volt supply. Write Jim Edwards, "Kallista," Sutton Forest, N.S.W.

HALLICRAFTER FM, AM, Model S47. Comp. Receiver, 88-108 Mc., B.C. 5.8-18 Mc., with transformer and Hallicrafter Hi-Fi Spkr. and Cabinet. Offers to 49 Dalgety Rd., Beaumaris, Vic.

SELL: Tape Tecnicorder, Model UG4, complete mike, tapes, as new, £65. Also Beam Prop. Motor. A. O. Brand, Long Jetty, N.S.W.

SELL: Type 3 Mk. II. comp. all spares, book, in-built modulation and spark. Like new. What offers? H. G. Wohlers, 107 Templeton St., Wangaratta, Vic.

WANTED: Prop. Pitch Motor complete with gearbox in good order. Please state condition and price to C. L. Haines, 14 Dandaloo Place, Mt. Gambier, S.A.

WANTED: Schematic circuit R1155A receiver, modifications and Australian substitute valves for R1155A, and lining up details. B. J. Booth, 229 Hanson Road, Athol Park, South Aus.

WANTED urgently, MRS RCU for RA10FA Receiver, Hope, 78 Battye Ave., Kogarah, N.S.W. LW 4550.

Homecrafts

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standard	30/- ea.
Carbon Resist., 1/2 w.	2/- dz.
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DPDT L/neck	18/- ea.

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3-Speed Record Changer in
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No. 1	7/2 ea.
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12" H/D Speaker	Hi-Fi reproduction. (Sorry cannot disclose maker)
10	Gns.

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'888'

FULL BAND SPREAD ON THE SIX MAJOR AMATEUR BANDS

By including only the six commonly-used Amateur bands the EDDYSTONE "888" offers big advantages. The expanded tuning scale gives a remarkable bandspread, enabling a frequency to be read to very fine limits. Also the L/C ratio for each tuned circuit can be chosen for maximum performance.

BANDSPREAD. The essentials of good bandspread are firstly a long scale and secondly a good drive mechanism. The "888" offers a scale 12" long and a geared drive mechanism having a reduction ratio of 40:1. With the vernier scale the mean average readings are:

Range	Freq. Limits (Kc/s.)	Kc/s. per division
1.	28,000 — 30,000	2.0
2.	21,000 — 21,500	0.7
3.	14,000 — 14,350	0.5
4.	7,000 — 7,300	0.33
5.	3,500 — 4,000	0.7
6.	1,800 — 2,000	0.25

FREQUENCY STABILITY. Excellent overall frequency stability is given by the oscillator circuit design. Negative temperature co-efficient condensers counteract long-term drift.

BUILT-IN CRYSTAL CALIBRATOR. The crystal calibrator provides marker points every 100 Kc/s. Positive corrections due to any slight circuit variation are easily made by the use of this calibrator and trimmer condenser.

AUDIO FILTER. Incorporated in the "888" is an audio filter, peaking at 1,000 cycles and having a bandwidth of 100 cycles for c.w. reception.

MONITORING. With Stand-by Switch "off", the receiver is de-sensitised but not fully muted, enabling c.w. and telephone monitoring of local transmission. Stand-by sensitivity is adjustable.

ELECTRICAL PERFORMANCE. Sensitivity throughout is better than 3 microvolts for a 20 db. signal-to-noise ratio (50 milliwatts output, 30% modulation); absolute sensitivity on c.w. is better than 0.5 microvolts.

Selectivity is variable from 30 db. to 60 db. down, 5 Kc/s. off resonance. With audio filter in circuit, a signal 250 cycles off resonance is attenuated 32 db.

Output power exceeds 2.5 watts into a 2.5 ohm load. Image ratio better than 35 db. at 30 Mc/s. and higher on other bands.

AERIAL INPUT. Input impedance, approximately 75 ohms balanced or unbalanced. An aerial trimmer permits optimum results.

OUTPUT CIRCUITS. Terminals at the rear take a speaker with impedance of 2.5 ohms; a panel jack is provided for high resistance headphones.

OTHER FEATURES. A rear socket takes the plug of Eddystone Cat. No. 888 "S" Meter; another permits use of vibrator power pack.

EDDYSTONE "888". Receivers are obtainable from all Eddystone Distributors. All radio receivers are subject to severe import restrictions, and supply is dependent upon import licence availability.

A FULLY DESCRIPTIVE BOOKLET AVAILABLE UPON REQUEST.

Amateur Price: £261/2/- (including Sales Tax £41/-3)

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